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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/774,389	02/10/2004	Toshiya Uemura	PTGF-03083	9738

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EXAMINER
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LOUIE, WAI SING

ART UNIT	PAPER NUMBER
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2814

DATE MAILED: 05/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/774,389

Applicant(s)

UEMURA, TOSHIYA

Examiner

Wai-Sing Louie

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 February 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5, 7, 10-13, and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Caracci et al. (US Pub. 2003/0063844) in view of Slater et al. (US 6,791,119).

With regard to claim 1, Caracci et al. disclose an optical signal device (paragraph [0026] et seq. and fig. 1), comprising:

- A transparent structure 12 mounted on the light emission surface the LED 26 (paragraph [0030] and fig. 1), where the transparent structure 12 is optically connected with the light emission surface 26 and has a light distribution characteristic based on a three-dimensional shape of the transparent structure 12 (paragraph [0030] and fig. 6-11);
- Caracci et al. do not disclose the LED 26 is a semiconductor light-emitting element including a substrate. However, Slater et al. disclose a semiconductor light-emitting diode including a substrate where light radiates from the light-emitting surface of the substrate opposite to an electrode forming surface (Slater col. 10, lines 15-50 and fig. 2). Slater et al. teach the solid state LED has high efficiency and able to extract the generated light at low cost per lumen (Slater col. 1, lines 47-51). Therefore, it would have been obvious to one of ordinary skill in

the art to modify Caracci's device with the teaching of Slater et al. to provide the solid state semiconductor LED including a transparent substrate opposite to the electrode forming surface in order to produce high efficiency and to extract light at low cost.

With regard to claim 2, Caracci et al. the transparent structure 12 has a length in the horizontal direction greater than that of the semiconductor LED 26 (fig. 1).

With regard to claim 3, Caracci et al. the transparent structure 12 has a thickness of half that of the semiconductor LED to twice the length of a shorter side of the semiconductor LED 26 (fig. 1).

With regard to claim 4, Caracci et al. modified by Slater et al. disclose the transparent structure has a microscopic uneven surface to diffuse light (Slater col. 15, lines 34-45 and fig. 9).

With regard to claim 5, Caracci et al. disclose the transparent structure 12 has a reflection layer 64 formed on its surface (fig. 1).

With regard to claim 7, Caracci et al. modified by Slater et al. disclose the electrodes 150 and 160 are metallic and reflective (Slater col. 7, line 66 to col. 8, line 3). Inherently, the electrodes do not transmit light.

With regard to claims 10-11, Caracci et al. modified by Slater et al. disclose a substrate 110, a buffer layer (Slater col. 7, lines 45-48), an n-type semiconductor layer 120, an intrinsic GaN light-emitting layer 130 (Slater col. 7, line 55), and a p-type semiconductor layer 140 (Slater col. 7, lines 33-45 and fig. 1).

With regard to claim 12, Caracci et al. modified by Slater et al. disclose the transparent structure 730 is SiC (Slater col. 12, line 49).

With regard to claim 13, Caracci et al. modified by Slater et al. disclose the substrate 110 comprises sapphire (Slater col. 7, line 17).

With regard to claim 16, in addition to the limitations disclosed in claim 1 above, Caracci et al. also disclose:

- The transparent structure 12 has a length in the horizontal direction greater than that of the semiconductor LED 26 (fig. 1).

With regard to claim 17, Caracci et al. modified by Slater et al. disclose the lead frame are electrically connected to electrodes formed on the electrode forming surface through wires (Slater fig. 2).

Claims 6, 8-9, 14-15, and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Caracci et al. (US Pub. 2003/0063844) modified by Slater et al. (US 6,791,119) as applied to claim 1 above, and further in view of Lowery et al. (US 6,351,069).

With regard to claims 6, 14-15, and 19-20, Caracci et al. modified by Slater et al. do not disclose one of the lead frames has a cup portion and the transparent structure is fixed on the cup portion through adhesive resin with light diffusion material mixed in. However, Lowery et al. disclose a LED 34 is positioned on the reflector cup lead frame 14 (Lowery fig. 3). Lowery et al. teach the reflector cup lead frame propagating output light in the general direction of the arrow 26 (Lowery col. 5, lines 54-56 and fig. 3). Therefore, it would have been obvious at the time the invention was made to modify Caracci's device with the teaching of Slater et al. and Lowery et al. to provide a cup lead frame in order to propagate output light in the general direction. Caracci

et al. modified by Lowery et al. disclose the LED is fixed on the cup portion 14 through adhesive resin 38 with phosphor (light diffusion material) mixed (Lowery col. 6, lines 64-67).

With regard to claim 8, in addition to the limitations disclosed in claim 1 above, Caracci et al. modified by Slater et al. and Lowery et al. also disclose:

- the light transmitting resin including a phosphor to wavelength-convert light emitted from the semiconductor light-emitting element (Lowery col. 6, lines 64-67).

With regard to claim 9, Caracci et al. modified by Slater et al. and Lowery et al. disclose the light transmitting resin contains two kinds of phosphor (Lowery col. 5, lines 5-7).

With regard to claim 18, Caracci modified by Slater et al. and Lowery et al. disclose the light transmitting resin that seals the semiconductor LED and the transparent structure (Lowery col. 5, lines 24-34 and fig. 3).

### ***Response to Arguments***

Applicant's arguments with respect to claims 1-16 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

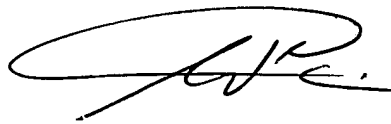
Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wai-Sing Louie whose telephone number is (571) 272-1709. The examiner can normally be reached on 7:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Wai-Sing Louie', with a large, sweeping initial 'W' and 'L'.

Wai-Sing Louie  
Patent Examiner

Wsl  
May 10, 2006.